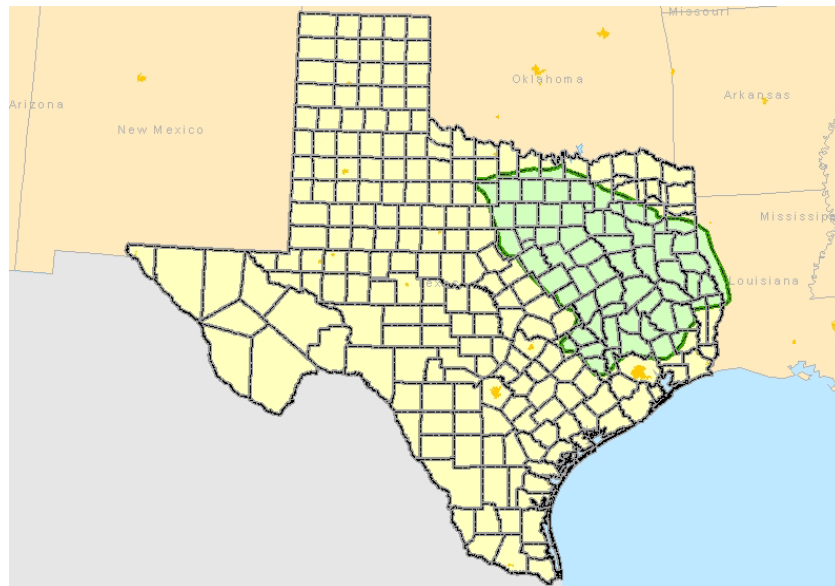


**U.S. Fish and Wildlife Service  
Region 2**

**EAST TEXAS  
ECOSYSTEM PLAN  
FY 2004 AND BEYOND**



**Prepared by the**

**EAST TEXAS ECOSYSTEM TEAM**

**LAST REVISED  
October 2003**

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## ECOSYSTEM DESCRIPTION

The East Texas Ecosystem encompasses the drainages of the Brazos, Trinity, Neches, and Sabine Rivers, with the exception of their coastal sections and the upper Brazos. The area's rivers run roughly parallel northwest to southeast, where they drain into the Gulf of Mexico. While the majority of this ecosystem is in east Texas, it also includes a portion of the Sabine River drainage in Louisiana including parts of Beauregard, Caddo, Desoto, Sabine and Vernon Parishes (Figure 1). The East Texas Ecosystem contains much of Texas' remaining bottomland hardwood wetlands, as well as considerable areas of mixed pine-hardwood forest and commercial pine plantations. Other ecological communities include large areas of Post Oak Savannah, Blackland Prairie, and Cross Timbers and Prairies ecological areas. It also includes four National Forests (Sabine, Angelina, Davy Crockett and Sam Houston), Big Thicket National Preserve, Trinity River National Wildlife Refuge (NWR), Peason Ridge of the Fort Polk military base, the Alabama-Coushatta Indian Reservation, numerous state wildlife management areas, and many large reservoirs. The Dallas-Fort Worth metroplex in the upper part of the Trinity River watershed is a major presence and influence.

The East Texas Ecosystem has a significant amount of forested, scrub-shrub, emergent, aquatic bed, and other palustrine and lacustrine wetlands. These wetlands and deep water areas provide habitat for large numbers of migratory waterfowl, wading birds, shorebirds, and resident species of amphibians, reptiles and mammals. Reservoirs and streams provide significant sport fisheries and some commercial operations. Both bottomland and upland woodlands, savannah, and grasslands provide breeding and migratory habitat for neotropical migrants. Remnant areas of longleaf pine and native prairie also occur. This ecosystem is the major bald eagle nesting and wintering area of Texas and contains all of the state's extant habitat for red-cockaded woodpeckers. It includes former range of the Louisiana black bear and potential habitat for reintroduction or natural expansion of that species, and the endangered Houston toad occurs in eight of its counties. Currently, 9 endangered species, 2 threatened species, 1 proposed species, 3 candidate species, and 43 species of concern are known to occur within the boundaries of the East Texas Ecosystem. (Appendix A).

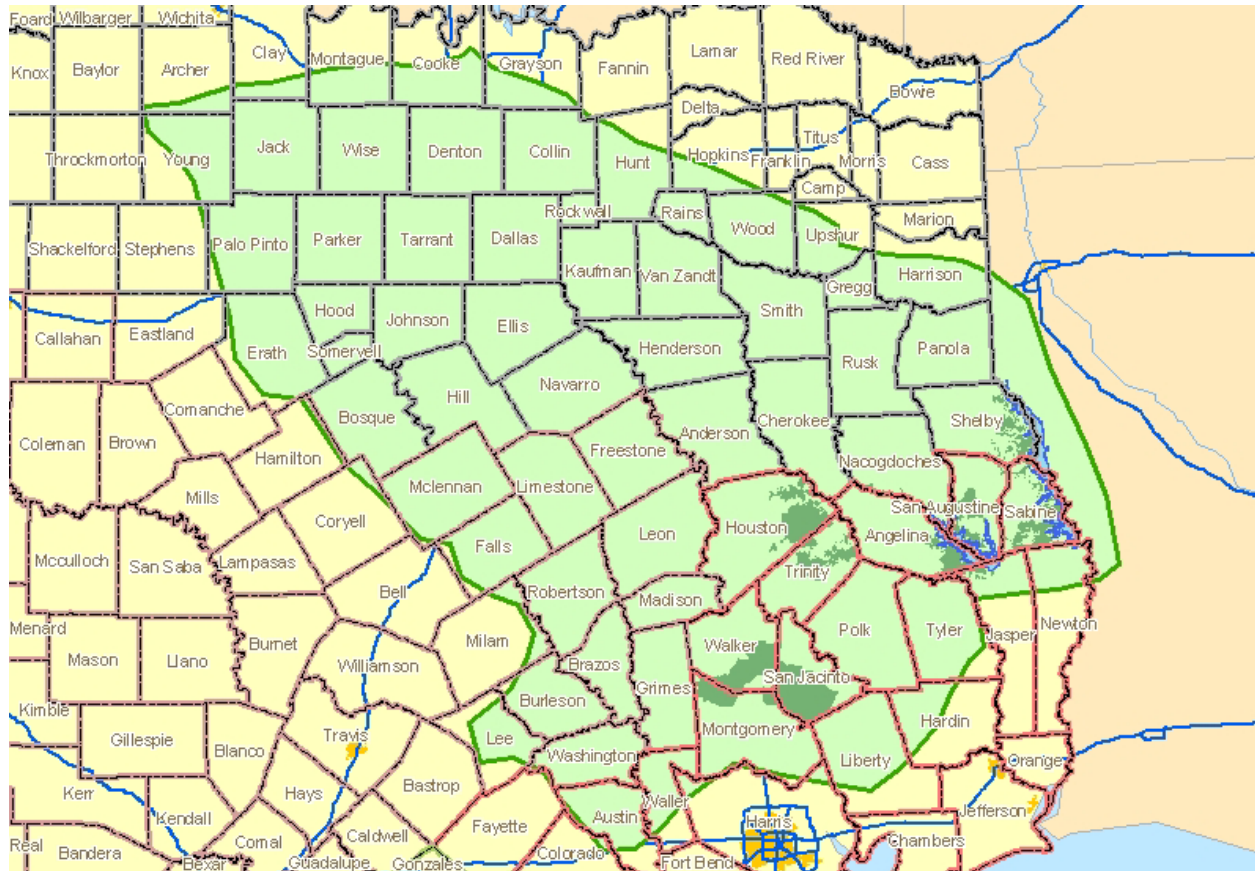
Major threats to the East Texas Ecosystem are continual loss and fragmentation of habitat from urban sprawl, forest land conversion to improved pasture, mineral extraction, dam and highway construction, pipeline and transmission line installation, soil and water contamination, short-rotation management of commercial forests, and introduction of exotic species.

# STATEMENT OF GOALS

**The goals of the East Texas Ecosystem Plan are to:**

- Promote biological diversity in the East Texas Ecosystem through protection, restoration and management of bottomland hardwood, palustrine wetland, native prairie, and longleaf-pine and pine/hardwood habitats, in cooperation with private landowners and state and local jurisdictions.
- Maintain and restore the capability of important riverine and lacustine habitats to support healthy populations of sport/commercial fishes, mussels, declining species, and other important fauna and flora.
- Improve the viability of endangered, threatened, candidate, and species of special concern by protecting and enhancing essential habitats.
- Work cooperatively to educate diverse segments of the human population, emphasizing the importance of protecting naturally diverse lands and waters, and fostering compatible recreational and economic opportunities.
- Work cooperatively with State, private, and federal entities to assess, manage, and restore fish and wildlife resources and their habitat throughout the ecosystem and emphasize the importance of biodiversity, native flora and fauna conservation, and management.

**FIGURE 1. Map of the East Texas Ecosystem in Texas and Louisiana**



## GOALS, OBJECTIVES, AND STRATEGIES

The following objectives and strategies have been identified and developed to accomplish the goals of the East Texas Ecosystem Plan.

**GOAL 1:** Promote biological diversity of the East Texas Ecosystem through protection, restoration and management of bottomland hardwood, palustrine wetland, native prairie, and longleaf-pine and pine/hardwood habitats, in cooperation with private landowners and state and local jurisdictions.

**OBJECTIVE #1:** In cooperation with partners, document diversity of bottomland hardwood sites, prioritize sites for acquisition, and pursue protection through acquisition from willing sellers and other mechanisms.

STRATEGY (1.1.1): FWS's Division of Realty and Refuge Planning will continue fee acquisition of **bottomland hardwood forest/wetland** complex to complete the approved 79,600-acre Trinity River NWR in Liberty County.

STRATEGY (1.1.2): The ecosystem team will help evaluate additional **bottomland hardwood and associated wetlands** for possible acquisition and other forms of protection. Priorities include the Neches River (Angelina, Cherokee, Houston, Polk, Trinity counties) and Sabine River (Harrison, Panola, Smith, Wood counties) corridors, and Trinity River floodplain north of the approved Trinity NWR acquisition boundary.

STRATEGY (1.1.3): Trinity River NWR, in partnership with local universities and interested parties, will develop a database of resident **plant, fish, avian, mammalian, and herpetological** species as a tool for management efforts, and to document the diversity of high-quality bottomland hardwood habitats.

**OBJECTIVE #2:** Restore and develop wetlands on private and public lands through cooperative landowner programs under Federal authorities.

STRATEGY (1.2.1): Arlington FO, Clear Lake ES, and Lafayette ES will participate each year with farmer organizations, local news media, etc., to promote the Partners for Fish and Wildlife Program and seek new **cooperators**.

STRATEGY (1.2.2): Arlington FO, Clear Lake ES, and Lafayette ES will work with NRCS, TFS, TPWD, and other entities to identify and develop **wetland protection projects** through the Partners for Fish and Wildlife Program or other mechanisms. The goal will be six projects, involving at least 600 acres, during each fiscal year.

STRATEGY (1.2.3): Arlington FO, Clear Lake ES, and Lafayette ES will work with Natural Resources Conservation Service (NRCS) and private landowners to identify sites and provide technical assistance for the Wetland Reserve Program (**WRP**), Wildlife Habitat Incentive Program (**WHIP**), and Environmental Quality Incentive Program (**EQUIP**).

STRATEGY (1.2.4): Arlington FO, Austin FO, Clear Lake ES and Lafayette ES will review proposed actions/projects of Federal agencies or those requiring a **Federal permit or license** and make recommendations to avoid, minimize, or mitigate loss of wetlands, and will inspect FmHA inventory properties for wetlands and other important resources.

STRATEGY (1.2.5): All stations will record the presence of invasive, exotic species and document the degree of invasion of natural communities. Efforts will be made to find methods of control or eradication and convey this information to private and public landowners.

STRATEGY (1.2.6): The East Texas Migratory Bird ( ET MB) Suboffice will serve as the West Gulf Coastal Plain (WGCP) all bird-all habitat initiative Coordinator for the Lower Mississippi Joint Venture of the North American Waterfowl Management Plan. The East Texas Ecological Services (ET ES) Suboffice will participate as a WGCP committee member.

STRATEGY (1.2.7): The Arlington FO, Austin FO, Clear Lake ES, ET Suboffices will support the East Texas Wetlands Project partnership with Ducks Unlimited, TPWD, and NRCS by working with private landowners to restore, enhance, and establish habitat for federal trust resources.

**OBJECTIVE #3:** Through active participation with partners, advocate, plan, and implement projects to restore native prairie.

STRATEGY (1.3.1): Arlington FO and Clear Lake ES will initiate conservation agreements with private landowners to restore and develop **native prairie** sites or develop management plans for prairie restoration through the Partners for Wildlife Program or other mechanisms. The goal will be at least 300 acres during each fiscal year.

STRATEGY (1.3.2): Arlington FO will coordinate with the USFS on recommendations for management and restoration of **native prairie** sites on the Caddo and LBJ National Grasslands and Sam Houston National Forest (NF).

STRATEGY (1.3.3): ET MB Suboffice will incorporate the goals of the Northern Bobwhite Quail Initiative for conservation and restoration of native prairie, old field, and pine savannah habitats.

**OBJECTIVE #4:** Sustain the ecological value and economic productivity of **longleaf-pine and shortleaf-pine/mixed-hardwood communities and their associated habitats.**

STRATEGY (1.4.1): Lafayette ES will work with Fort Polk and formulate and implement measures to enhance, protect, and restore natural diversity values on the **Peason Ridge** area in a manner compatible with the Department of Army's use of that area as a military training site. Efforts will focus on longleaf-pine and bottomland hardwood, and unique communities such as pitcher plant bogs, hillside seeps, etc

STRATEGY (1.4.2): Arlington FO, and the ET Suboffices will cooperate with private landowners and The Nature Conservancy on implementation of the **Pineywoods Conservation Initiative and Ecoregional Planning.**

STRATEGY (1.4.3): Arlington FO through the ET ES Suboffice will continue to assist private landowners with the Brushy Creek 2,000-acre Red-cockaded Woodpecker (RCW) and Longleaf-Pine Management Area in Trinity County, Texas.

**GOAL #2:** Maintain and restore the capability of important riverine and lacustine habitats to support healthy populations of sport/commercial fishes, mussels, declining species, and other important fauna and flora.

**OBJECTIVE 1:** In cooperation with partners, promote the wise use of fishery resources, and help to restore declining populations of aquatic species in the East Texas Ecosystem.

STRATEGY (2.1.1): Natchitoches and Uvalde NFH's, and Baton Rouge and Oklahoma FRO's, will work with LDWF and TPWD to produce **paddlefish** fingerlings for stocking in East Texas rivers.

STRATEGY (2.1.2): Natchitoches and Tishomingo NFH's; Baton Rouge and Oklahoma FRO's; and the Gulf Coast Fisheries Coordination Office (FCO), will work with LDWF and TPWD to enhance habitat and produce **striped bass** brood-stock and fingerlings for restoration stocking in east Texas and west Louisiana rivers.

STRATEGY (2.1.3): Appropriate FRO, FO, and ES offices will aid TPWD and USFS in determining the current status of **fish communities in east Texas rivers**, with specific emphasis on sportfish and declining species.



**OBJECTIVE 2:** With partners, work toward the restoration and protection of water quality in important river and lacustrine habitats within the East Texas Ecosystem.

STRATEGY (2.2.1): Appropriate Field Offices will review and coordinate with other Federal, State, and local agencies in the development or renewal of water quality standards, discharge permits, and related water quality planning.

STRATEGY (2.2.2): Appropriate offices will respond and coordinate FWS concerns and recommendations on contaminant spills, emergency response, etc. to insure that fish and wildlife resources are adequately considered during clean-up activities.

**GOAL #3:** Improve the viability of endangered, threatened, and candidate species and species of special concern by protecting and enhancing essential habitats.

**OBJECTIVE # 1:** Work with partners to restore endangered species habitat and minimize impacts to populations of rare species.

STRATEGY (3.1.1): Arlington FO, through the ET ES Suboffice, will participate in implementation of the Regional **Habitat Conservation Plan** for the Red-cockaded Woodpecker on Private Land in the East Texas Pineywoods, along with TPWD and TFS.

STRATEGY (3.1.2): The ET Suboffices will assist the West Gulf Coastal Plain **RCW** Translocation Cooperative in the monitoring, capture, augmentation, and translocation of juvenile RCW's into viable sub-populations in Texas, Oklahoma, Arkansas, and Louisiana.

STRATEGY (3.1.3): The ET ES Suboffice will cooperate with TPWD and TFS in locating and protecting **RCW** habitat on private lands, and will develop outreach materials for private landowners with RCW questions and concerns.

STRATEGY (3.1.4): Arlington FO will make recommendations for **RCW** management in the Alabama-Coushatta Indian Reservation's Natural Resources Plan, and will plan and monitor implementation.

STRATEGY (3.1.5): The ET ES Suboffice will continue to assist USFS in monitoring **RCW** group composition and related habitat conditions associated with impacts of the February 1998 windstorm within RCW Habitat Management Areas, and will provide technical assistance to expedite habitat restoration.

STRATEGY (3.1.6): Lafayette ES will work in partnership with Fort Polk military installation, Louisiana, to plan and implement recovery actions on the Peason Ridge area for the **RCW**.

STRATEGY (3.1.7): ET ES Suboffice in conjunction with Conway, Arkansas ES FO will assist in the development of a habitat model for pine savannahs to include recommendations for conservation and restoration of habitat for RCW, Bachman's Sparrow, Brown-headed Nuthatch, Northern Bobwhite, and other species.

STRATEGY (3.1.7): ET ES Suboffice will assist USFS in annual surveys for the **Navasota ladies'-tresses** in Angelina National Forest and will develop conservation recommendations for future management.

STRATEGY (3.1.8): Austin FO will work with gas pipeline companies, roadway projects, The Nature Conservancy and other partners to develop a regional conservation approach for the **Navasota ladies'-tresses** and to streamline the consultation process.

STRATEGY (3.1.9): Arlington FO, ET ES Suboffice, and Clear Lake ES will work with the USFS and private landowners to develop management plans for **seven plant species of special concern** found within and adjacent to the boundaries of Angelina, Sabine, and Davy Crockett National Forests.

STRATEGY (3.1.10): Clear Lake ES will pursue the development of a management and restoration plan with private landowners for the endangered **Texas trailing phlox**.

STRATEGY (3.1.11): Clear Lake ES and ET Suboffices will work with cooperating landowners and land-managers to protect and restore habitat of the endangered **white bladderpod**.

STRATEGY (3.1.12): Clear Lake ES and the ET Suboffices will contact landowners and land managers of known and potential sites of the **Neches River rose-mallow**, a candidate species, and pursue conservation agreements and restoration efforts.

STRATEGY (3.1.13): Clear Lake ES will initiate development of a listing package for the **Neches River rose-mallow**, a candidate species.

STRATEGY (3.1.14): Clear Lake ES will continue a status survey of the **Texas golden gladeceess**, a candidate species, and initiate the listing process if warranted.

STRATEGY (3.1.15): Arlington FO will represent the Ecosystem Team on **Louisiana Black Bear** issues.

STRATEGY (3.1.16): Clear Lake ES, ET ES Suboffice, Jackson ES, and Lafayette ES will pursue development and implementation of Conservation Agreements for the **Louisiana pine snake** on National Forest lands and private land, and examine the need to list the species.

STRATEGY (3.1.17): Austin FO will work with TPWD, NRCS, and others to develop technical guidance for private landowners regarding land-use practices that may impact **Houston toads**, and will conduct a Section 7 consultation to address incidental take of individual toads.

STRATEGY (3.1.18): Austin FO and Clear Lake ES will pursue revision of the recovery plan for the **Houston toad** based on new information and current recovery goals.

STRATEGY (3.1.19): Arlington FO, Austin FO, Clear Lake ES, East Texas Suboffice, and Lafayette ES will conduct **Section 7** consultation activities on federally funded or permitted development proposals that may affect listed species in the East Texas Ecosystem

**GOAL #4:** Work cooperatively to educate diverse segments of the human population emphasizing the importance of protecting naturally diverse lands and waters, and fostering compatible recreational and economic opportunities.

**OBJECTIVE #1:** Emphasize the importance of biodiversity, endangered species conservation, and the prudent use of fish and wildlife resources, in public contacts and presentations.

STRATEGY (4.1.1): All Stations will emphasize **biodiversity and natural resource conservation** through review of Federal projects, participation in public events, and in presentations to schools, universities, public and private organizations, professional conferences and meetings, and representatives of the media.

STRATEGY (4.1.2): Provide a safe, quality wildlife refuge experience to the public. Open the Trinity River NWR to the public for the following wildlife-oriented compatible uses: hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation.

STRATEGY (4.1.3): All stations will support the development of the Prairies and Pineywoods Wildlife Viewing Trail in the East Texas Ecosystem through Texas Department of Transportation's TEA-21 funds and other sources.

STRATEGY (4.1.4): Continue working with local community officials and other support groups to construct a visitor center on the Trinity National Wildlife Refuge. Educational displays will emphasize habitats found within the East Texas Ecosystem.

**GOAL #5:** Work cooperatively with State, private, and federal entities to assess, manage, and restore fish and wildlife resources and their habitat throughout the ecosystem and emphasize the importance of biodiversity, native flora and fauna conservation, and management.

***OBJECTIVE #1*** : Promote the value and use of prescribed fire across the landscape to restore the ecological communities suppressed due to the lack of burning.

STRATEGY (5.1.1): The ET Suboffices will assist/support the Forest Service on implementation of dormant and growing season **prescribed burns** in pine habitat on the National Forests in Texas.

STRATEGY (5.1.2): The ET Suboffices in cooperation with the Conservation Delivery Team of the West Gulf Coastal Plain Initiative will promote the use of prescribed fire on private lands where appropriate.

***OBJECTIVE # 2:*** Restore suitable habitat for game and non-game wildlife species through implementation of land management practices.

STRATEGY (5.2.1): The ET Suboffices will assist Federal, State, and Private partners with implementation of management recommendations for the **American woodcock** in east Texas, pursuant to FWS's assessment of the species' status.

STRATEGY (5.2.2): The ET Suboffices will assist other agencies and private partners with the restoration of the **eastern wild turkey** and their habitat in east Texas.

STRATEGY (5.2.3): The ET Suboffices will assist other agencies and private partners with the restoration of the **northern bobwhite** in east Texas.

STRATEGY (5.2.4): The ET MB Suboffice in coordination with Texas Parks and Wildlife Department has initiated a study of nesting **wood duck** populations within the West Gulf Coastal Plain.

## **PARTNERSHIP OPPORTUNITIES**

Opportunities for habitat protection and restoration are available through a number of private, local, county, state, and federal partners.

Federal agencies include:

- Corps of Engineers (COE)
- Environmental Protection Agency (EPA)
- Farmers Home Administration (FmHA)
- National Park Service (NPS)
- National Resources Conservation Service (NRCS)
- U.S. Forest Service (USFS)
- U.S. Department of the Army, Fort Polk

State agencies:

- Texas Parks and Wildlife Department (TPWD)
- Louisiana Department of Wildlife and Fisheries (LDWF)
- Texas Forest Service (TFS).

Other partners include:

- Texas Nature Conservancy (TNC)
- Ducks Unlimited
- National Wild Turkey Federation
- Quail Unlimited
- Friends of the Trinity River Refuge
- Commercial timber companies
- conservation groups
- private landowners.

# **PUBLIC REVIEW OF EAST TEXAS ECOSYSTEM PLAN**

On January 24, 1995, the initial East Texas Ecosystem Plan was sent out for comment to approximately 35 representatives of agencies, organizations and industries in east Texas. Responses were received from the following organizations:

- U.S. Department of Agriculture, Natural Resources Conservation Service, Temple, Texas
- U.S. Department of Agriculture, Natural Resources Conservation Service, Bryan, Texas
- U.S. Department of Agriculture, Forest Service Southern Research Station, Nacogdoches, Texas
- U.S. Environmental Protection Agency, Dallas, Texas
- National Park Service, Big Thicket National Reserve, Beaumont, Texas
- Texas Department of Agriculture, Austin, Texas
- Texas Forest Service, College Station, Texas
- Texas Parks and Wildlife Department, Austin, Texas
- Texas Society of American Foresters, Lufkin, Texas
- Champion International Corporation, Huntsville, Texas
- Stephen F. Austin State University, College of Forestry, Nacogdoches, Texas

No public comment has been sought since the preparation of the original East Texas Ecosystem Plan of October 1995.

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**APPENDIX A.** Federally listed, proposed, and candidate endangered and threatened species; species of concern; and select game species in the East Texas Ecosystem.

SPECIES	FEDERAL STATUS*	STRATEGIES IN ETE PLAN WHICH COULD BENEFIT SPECIES	PROJECTS OR PROPOSALS	DOMINATING ASSOCIATED VEGETATION
<b>AMPHIBIANS</b>				
Houston toad ( <i>Bufo houstonensis</i> )	E/CH	3.1.18, 3.1.19	FWS, TPWD	sandy uplands, pine/mixed-forest savannah, small wetlands; Bastrop, Austin, Burleson, Colorado, Freestone, Leon, Milam, Robertson counties
<b>BIRDS</b>				
Bachman's sparrow ( <i>Aimophila aestivalis</i> )	SOC	1.4.1, 1.4.2, 1.4.3, 5.1.1, 5.2.2		open, park-like stands of tall pines, with substantial grassy cover but minimal midstory
Henslow's sparrow ( <i>Ammodramus henslowii</i> )	SOC	1.2.6, 1.2.7, 1.4.1, 1.4.2, 1.4.3, 5.1.1, 5.2.2	Trinity River NWR: ongoing monitoring and habitat management program.	winter habitat is wet, grassy openings in pine forest and mixed woodlands.
Ferruginous hawk ( <i>Buteo regalis</i> )	SOC	1.3.1		prairies, savannas; rare winter resident in central TX (not in east TX)
Piping plover ( <i>Charadrius melodus</i> )	T	1.1.3		Migrates through east Texas. Lakes and rivers
Black tern ( <i>Chlidonias niger</i> )	SOC	1.1.1, 1.1.3, 1.2.6, 1.2.7		marshes, lakes, small ponds; common transient (May-June, August-September) in east TX
Northern bobwhite ( <i>Colinus virginianus</i> )	GAME	1.1.3, 1.3.1, 1.3.3, 5.1.1, 5.2.2, 5.2.3		declining populations in East Texas probably due to fire suppression
Golden-cheeked warbler ( <i>Dendroica chrysoparia</i> )	E	3.1.19, 4.1.1	FWS, TPWD	oak-juniper woodlands on the Edwards Plateau in central TX
American swallow-tailed kite ( <i>Elanoides forficatus</i> )	SOC	1.1.1, 1.1.2, 1.1.3, 1.2.6, 1.2.7		riparian forest, woodlands, prairies; rare transient along coast but sightings are increasing

Bald eagle ( <i>Haliaeetus leucocephalus</i> )	T/ DE	1.1.3, 1.2.2, 1.2.6, 1.2.7, 3.1.19	TPWD, FWS	large, tall trees (40-120 feet) along river systems or other large body of water (lake or reservoir)
Loggerhead shrike ( <i>Lanis ludovicianus migrans</i> )	SOC	1.3.1, 1.3.2		savannas, tall-grass prairies, farmlands; common permanent resident over most of state
Eastern wild turkey ( <i>Meleagris gallopavo</i> )	GAME	1.1.3, 1.4.1, 1.4.2, 1.4.3, 3.1.6, 5.1.1, 5.2.2, 5.2.3		restoration efforts by TPWD has been very successful in many areas
Wood stork ( <i>Mycteria americana</i> )	SOC	1.1.1, 1.1.2, 1.1.3		wetlands, prairies; rare to casual at large inland lakes; may have bred formerly
Red-cockaded woodpecker ( <i>Picoides borealis</i> )	E	1.4.1, 1.4.2, 1.4.3, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6	FWS, TPWD, USFS	upland pine/ pine hardwood forests
White-faced ibis ( <i>Plegadis chihi</i> )	SOC	1.1.1, 1.2.6, 1.2.7	TPWD	marshes, lakes, ponds; rare transient in east TX
American woodcock ( <i>Scolopax minor</i> )	GAME	1.1.3, 5.1.1, 5.2.1		wetlands and young pine stands; research needed
Interior least tern ( <i>Sterna antillarum</i> )	E	1.1.3, 1.2.6, 1.2.7, 3.1.19	FWS	broad sandbars and barren shores along wide, shallow rivers; historically on Red River
Black-capped vireo ( <i>Vireo atricapillus</i> )	E	3.1.19	FWS, TPWD	scattered trees and clumps of oak scrub or juniper growing to ground level, with open areas of bare ground, rock, or grasses; central TX
<b>FISH</b>				
Smalleye shiner ( <i>Notropis buccula</i> )	SOC	2.1.3		broad, turbid channels of mainstream river, over sandy bottom; upper Brazos River drainage
Bluehead shiner ( <i>Notropis hubbsi</i> )	SOC	2.1.3		bottomland streams; Caddo Lake drainage
Sharpnose shiner ( <i>Notropis oxyrhincus</i> )	SOC	2.1.3		large turbid river with bottom a combination of sand/gravel/clay-mud; Brazos River drainage

Sabine shiner ( <i>Notropis sabiniae</i> )	SOC	2.1.3		Nacogdoches County in LaNanna Creek, Houston County in Austin Branch of the Neches River, Sabine River drainage in east Tex and LA
Blackside darter ( <i>Percina maculata</i> )	SOC	2.1.3		clear streams; NE TX
Paddlefish ( <i>Polyodon spathula</i> )	SOC	1.1.1, 1.1.2, 1.1.3, 2.1.1	TPWD	large, slow-moving rivers with clean gravel bars for spawning; Neches, Trinity, Sabine rivers
Shovelnose sturgeon ( <i>Scaphirhynchus platyrhynchus</i> )	SOC	2.1.1, 2.1.3		Red River
<b>INVERTEBRATES</b>				
Black lordithon rove beetle ( <i>Lordithon niger</i> )	SOC	1.3.1		Dallas County
Texas heelsplitter ( <i>Potamilus amphichaenus</i> )	SOC	2.1.3	TPWD	rivers and streams of Neches and Sabine river systems
<b>MAMMALS</b>				
Louisiana black bear ( <i>Ursus americanus luteolus</i> )	T	1.1.3, 1.2.7, 3.1.15	TPWD	bottomland hardwood, upland hardwoods, mixed forest, wetlands, agricultural fields; baldcypress and tupelo trees for denning
Southeastern myotis bat ( <i>Myotis austroriparius</i> )	SOC	1.1.1, 1.1.2, 1.1.3	TPWD	bottomland hardwood, hardwood-pine, pine-oak forests, caves, hollow trees, abandoned buildings
Rafinesque's big-eared bat ( <i>Corynorhinus rafinesquii</i> )	SOC	1.1.1, 1.1.2	TPWD	longleaf-pine and pine-oak forest, hollow trees, abandoned buildings
<b>PLANTS</b>				
Large-fruited sand verbena ( <i>Abronia macrocarpa</i> )	E	1.3.1	TPWD, Austin ES FO	deep sands in post oak woodland openings; Freestone, Leon, Robertson counties
Navasota false-foxglove ( <i>Agalinis navasotensis</i> )	SOC			Grimes County

Incised groovebur ( <i>Agrimonia incisa</i> )	SOC	3.1.9	USFS	Catahoula formation/hillside seepage-bogs; Angelina, Jasper, Newton, Sabine counties
Rough-stemmed aster ( <i>Aster puniceus</i> ssp. <i>elliottii</i> var. <i>scabrimaculis</i> )	SOC	3.1.9		open seepage-bogs of Carrizo, Sparta, Queen City formations; Anderson, Cherokee, Franklin, Henderson, Hopkins, Smith, Van Zandt, Wood counties
Tissue sedge ( <i>Carex hyalina</i> )	SOC	3.1.9		swamps, moist soils in open bottomland forests; Cass, Dallas, Houston, Liberty, Walker counties
Golden-wave tickseed ( <i>Coreopsis intermedia</i> )	SOC	1.3.1, 3.1.3, 3.1.9		sandy uplands in Anderson, Cass, Cherokee, Franklin, Freestone, Harrison, Henderson, Houston, Leon, Trinity, Upshur, Wood counties
Warner's hawthorn ( <i>Crataegus warneri</i> )	SOC	1.3.1, 3.1.9, USFS		sandy uplands in Anderson, Cherokee, Freestone, Houston, Morris, Panola, Walker counties
Southern lady's -slipper ( <i>Cypripedium kentuckiense</i> )	SOC	3.1.9, USFS		wooded seepage areas and mesic ravines, blackgum/beechness forest; Cass, Harrison, Nacogdoches, Sabine, San Augustine counties
Dwarf (small headed) pipewort ( <i>Eriocaulon kornickianum</i> )	SOC	3.1.9, USFS		upland seeps/bogs in post-oak woodlands; Anderson, Brazos, Leon (?), Limestone, Tyler cos.
White firewheel <i>Gaillardia aestivalis</i> var. <i>winkleri</i> )	SOC	3.1.9		sandy uplands, in openings within pine/oak woodlands; Hardin County
Glass mountain coral-root ( <i>Hexalectris nitida</i> )	SOC	(not on TPWD or TOES list)		
Neches River rose-mallow ( <i>Hibiscus dasycalyx</i> )	C	1.2.7, 3.1.12, 3.1.13,	FWS	open, semi-permanent wetlands in Cherokee, Houston, Trinity counties
Tiny bog buttons ( <i>Lachnocaulon digynum</i> )	SOC	3.1.9, USFS		Catahoula formation/hillside seepage-bogs; Jasper and Newton counties
Texas golden gladebush ( <i>Leavenworthia texana</i> )	C	3.1.14	TNC, FWS	Weches seepage-glades; Sabine and San Augustine counties

White bladderpod ( <i>Lesquerella pallida</i> )	E	3.1.11	TNC, FWS	Weches seepage-glades in San Augustine County
Slender gay feather ( <i>Liatris tenuis</i> )	SOC	3.1.9, USFS		upland pine/bluestem savannas in Angelina, Jasper, Newton, Sabine, Tyler counties
Texas trailing phlox ( <i>Phlox nivalis</i> var. <i>texensis</i> )	E	3.1.10	TNC, FWS	deep sandy soils in longleaf-pine savanna or mixed forest; Hardin, Polk, Tyler counties
Rattlesnake root ( <i>Prenanthes barbata</i> )	SOC	3.1.9, USFS		moist sands and hillside seepage-bogs; Hardin, Jasper, Nacogdoches, Shelby counties
Bog coneflower ( <i>Rudbeckia scabrifolia</i> )	SOC	3.1.9, USFS		Catahoula formation/hillside seepage-bogs; Angelina, Jasper, Newton, Sabine counties
Scarlet catchfly ( <i>Silene subciliata</i> )	SOC	3.1.9		sandy soil in longleaf-pine/mixed forest savanna; Hardin, Jasper, Liberty, Newton, Polk, Sabine, Shelby, Tyler counties
Navasota ladies'-tresses ( <i>Spiranthes parksii</i> )	E	3.1.7, 3.1.8	TNC, USFS, FWS	moist sandy soils in post oak savanna; Navasota and Brazos River drainages (primarily Brazos and Grimes counties) and in Jasper County
Drummond's yellow-eyed grass ( <i>Xyris drummondii</i> )	SOC	3.1.9, USFS		Catahoula formation/hillside seepage-bogs; Angelina, Jasper, Newton counties
Rough-leaf yellow-eyed grass ( <i>Xyris scabrifolia</i> )	SOC	3.1.9, USFS		Catahoula formation/hillside seepage-bogs; Angelina, Jasper, Newton, Sabine counties
<b>REPTILES</b>				
Northern scarlet snake ( <i>Cemophora coccinea copei</i> )	SOC	1.1.1		sandy ridges of pine/hardwood forest of east TX; oak/hickory forest; pine/hardwood forest
Timber (=canebrake) rattlesnake ( <i>Crotalus horridus</i> )	SOC	1.1.1, 1.1.2, 1.1.3		dense undergrowth in floodplain forests and swamps of east TX
Alligator snapping turtle ( <i>Macrochelys temminckii</i> )	SOC	1.1.1, 1.1.2, 1.1.3	USFS, TPWD	freshwater wetlands with muddy bottoms

Brazos water snake ( <i>Nerodia harteri</i> )	SOC	2.1.3		rocks in shallow flowing water or along rocky shorelines; rocky parts of upper Brazos River drainage, Lake Granbury, Possum Kingdom Lake
Texas horned lizard ( <i>Phrynosoma cornutum</i> )	SOC			open, flat terrain, bare ground; central and west Texas, formerly east Texas
Louisiana pine snake ( <i>Pituophis ruthveni</i> )	C	3.1.16	USFS	pine forest and sandy soils; Angelina, Jasper, Newton, Sabine, Tyler, Trinity counties

\* E – Endangered, T – Threatened, DE - Delisting in progress of a threatened and endangered species, P - Proposed threatened and endangered species, C - Candidate species for threatened or endangered species status, SOC - Species of concern (including species listed as threatened or endangered by Texas Parks and Wildlife Department), GAME - Game species , CH – Critical habitat designated